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PRE-APPEAL BRIEF REQUEST FOR REVIEW	Docket Number (Optional) 0649-1032PUS1

	Application Number	Filed
	09/188,190	November 10, 1998
	First Named Inventor: Katsunori Kaneko	
	Art Unit: 3748	Examiner: Nguyen

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- [ ] applicant /inventor.
- [ ] assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- [ ] attorney or agent of record. Registration number _____
- [x] attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34. 19,382

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Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

- [ ] *Total of 1 forms are submitted.

Applicant's Reasons in Support of Review

The Examiner relies on Murachi et al '989 (as primary reference together with additional references) in support of three separate rejections of the claims which have been made Final.

While applicants believe (as previously argued) that several distinctions exist between the claimed invention and the teachings of the cited references, applicants focus herein as a primary distinction over the primary reference Murachi et al *the use of separate and distinct NOx and SOx control means.*

Claim 23, the sole independent claim under rejection, is as follows (with the specific limitation at issue being highlighted):

> 23. An exhaust gas purifying apparatus of an internal combustion engine, comprising:
>
> a light-off catalyst provided in an exhaust passage and having an O_2 storage capability such that said light-off catalyst passes, there through, at least CO in an exhaust gas to a downstream side of said light-off catalyst when the internal combustion engine is operating under a condition where the oxygen concentration of the exhaust gas is reduced;
>
> exhaust gas purifying means provided in the exhaust passage at a downstream position of and in series with said light-off catalyst, said exhaust gas purifying means having a NOx catalyst for adsorbing NOx in the exhaust gas when an air-fuel ratio of the exhaust gas is lean and releasing the adsorbed NOx when the oxygen concentration of the exhaust gas is reduced, said exhaust gas purifying means further having a three-way catalyst that reacts with the released NOx;
>
> wherein the light-off catalyst has an oxygen storage capability of a first value and the three-way catalyst of the exhaust gas purifying means has an oxygen storage capability of a second value greater than said first value, said first and second values being per one liter of catalyst;
>
> and
>
> ***NOx regeneration control means for repeatedly releasing NOx adsorbed by the NOx catalyst every first interval outside the temperature range where SOx is releasable, and separate SOx regeneration control means independent from said NOx regeneration control means for***

repeatedly releasing SOx adsorbed by the NOx catalyst every second interval, said second interval being longer than the first interval and determined independently from said first interval.

The Examiner takes the position that Murachi et al teaches an exhaust gas purifying apparatus of an internal combustion engine comprised of (a) a light-off catalyst 5 provided in an exhaust passage, (b) exhaust gas purifying means 9 provided in the exhaust passage downstream of the light-off catalyst, (c) NOx control means 20,4 for repeatedly releasing NOx adsorbed by the NOx catalyst every first interval (2 minutes) and (d) SOx control means repeatedly releasing SOx adsorbed by the NOx catalyst every second interval (every 60 minutes) independent from and longer than the first interval.

With regard to the noted limitation directed to separate and independent NOx and SOx control means (and without waiving their right to rely on any additional distinctions at a later time that were previously argued), applicants disagree with the position of the Examiner.

Applicants initially note that NOx control means 20,4 of the reference is defined at column 3, lines 34-64 as "control circuit 20" and "injection valve 4." At column 3, lines 54-56 the control circuit is described as being directed to "an operation for causing NOx absorbent to release the absorbed NOx" which is "referred to as 'a regeneration of the NOx absorbent'."

Murachi et al describes at column 8, lines 49-64 the circumstances under which SOx may additionally be removed from the absorbent together with NOx that has also been absorbed:

> "Therefore, if the normal regenerating operation in which the air-fuel ratio of the exhaust gas is enriched is conducted, sulfate is not released from the absorbent. This causes accumulation of the SO_3 in the NOx absorbent 9, and eventually causes saturation of NOx absorbent 9 with SO_3. If the saturation of NOx absorbent 9 with the absorbed SO_3 occurs, the absorbing capacity of the NOx absorbent for both SO_3 and NOx decreases largely. Therefore, the NOx absorbent 9 is regenerated at an exhaust gas temperature higher than that in the normal regenerating operation during the regenerating operation of the DPF 7 to release sulfate, as well as NOx from the NOx absorbent 9. By regenerating the NOx absorbent 9 at a high exhaust gas temperature, SO_3 absorbed in the absorbent is released in the form of SO_2 and thereby, the absorbing capability of the NOx absorbent 9 is maintained."

The reference further states at the paragraph bridging columns 12 and 13 as follows regarding NOx and SOx release:

> "Further, if the periods of the regenerating operations of the DPF 7 and NOx absorbent 9 (TD_0 and TN_0) are set to about 3 minutes and 0.5 seconds, respectively, the regenerating operation of the NOx absorbent 9 is always conducted once or twice during the regenerating operation of the DPF as shown in FIG. 5. Therefore, by setting the timing of the regenerating operations of the DPF 7 and NOx absorbent 9, the NOx absorbent 9 is regenerated periodically by the exhaust gas having a temperature higher than that of the normal regenerating operation and thereby, SO_3 (sulfate) as well as NOx is released from the NOx absorbent 9 periodically. Thus, the absorbing capacity of NOx absorbent 9 can be maintained at a high level."

The Examiner asserts that Murachi et al teaches that a NOx release control is performed every first interval (2 minutes), and that a SOx release control is performed every second interval (60 minutes). However, the NOx release control and SOx release control are <u>not</u> performed independently of each other as a result of the action of separate and independent NOx release control means and SOx release control means. Instead, SOx release occurs as a result of the use of higher temperature exhaust gas for NOx regeneration,

which concurrently results in SOx removal. Separate and independent NOx and SOx regeneration control means are not provided by Murachi – indeed, the Examiner asserts that control means 20,4 constitute the requisite control means. It is clear that control means 20,4 cannot constitute separate distinct and independent control means for both NOx and SOx as recited in claim 23, particularly in view of the description of the method of operation in Murachi et al.

In support of his position, the Examiner states that, since in Murachi et al it is possible to release NOx even when SOx release control is not taking place, then SOx release control and NOx release control in Murachi et al are "independent from" each other. The Examiner's position on this point is not supported by the teachings of the reference.

The expression "control is performed independently" in claim 23 means that a SOx release control is performed even under those conditions where NOx release control cannot be performed - in other words, wherein the instruction to perform a SOx release control and the instruction to perform a NOx release control are independent from each other.

In Murachi et al, when NOx release control and DPF regeneration control coincide, SOx release control is performed at the same time. The system of the reference is configured so that SOx release is automatically performed when the command for NOx release is given under certain conditions as discussed above. However, there exists no teaching in Murachi et al regarding the use of control means to conduct SOx release control absent NOx release.

Thus, to perform SOx release according to the teachings of Murachi et al, it is essential that NOx release be performed at the same time – the reference makes clear that SOx release thus does not occur without NOx release being also performed at the same time.

Accordingly, since, in Murachi et al, NOx release is essential for the execution of SOx release, it is not correct to conclude that SOx release control and NOx release control either could or should be carried out "independently from" each other. The Examiner points to no portion of Murachi et al that suggests that such an embodiment could or should be employed. Indeed, such an embodiment is inconsistent with the teachings of Murachi et al.

This means that Murachi et al neither describes nor suggests the execution of NOx and SOx release control *independent from* each other as claimed by applicants, and certainly fails to teach or suggest the following limitation of claim 23:

> ***"NOx regeneration control means for repeatedly releasing NOx adsorbed by the NOx catalyst every first interval outside the temperature range where SOx is releasable, and separate SOx regeneration control means independent from said NOx regeneration control means for repeatedly releasing SOx adsorbed by the NOx catalyst every second interval, said second interval being longer than the first interval and determined independently from said first interval."***

Given the failure of Murachi et al to teach or suggest the "regeneration control means" limitation, and given the fact that the remaining references relied upon by the Examiner are not relied upon to teach this limitation, and as Murachi et al is relied upon as the primary reference in support of each of the three Final Rejections of the pending claims, applicants believe that all Final Rejections are without basis and should be withdrawn.

The application is believed to be in condition for allowance.